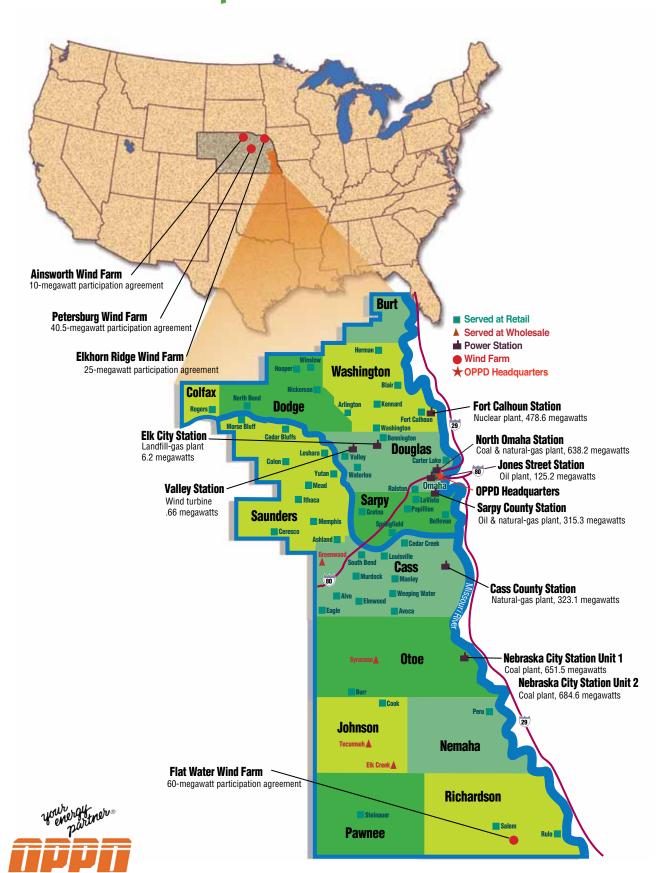


# servicemap

Omaha Public Power District





Gary Gates, OPPD President and CEO

### **Getting Greener by the Day**

At OPPD we are excited as our renewable energy and sustainability program continues to gain momentum. The coming year holds the promise of a growth spurt across our wide range of programs to save money and energy without any compromise of reliability.

Our 2011 Sustainability Report tells the story of how we are steadily growing greener through hard work and creativity. It highlights our focus on renewable energy, environmental stewardship and energy efficiency.

We believe our customers will share our enthusiasm for a number of innovative green projects to deliver meaningful energy savings. One is our new Omaha Service Center, a model of green building design and operation. Another is our AC Management program to shave peak demand in the heat of the summer. We also continue to prepare for the future energy demands of electric vehicles beginning to hit the road.

Best of all, by the end of 2012, we could be nearly halfway toward our goal of generating 10 percent of our energy from renewable resources by 2020. That's certainly one of the most tangible measures of how OPPD is growing greener all the time.

Thank you for your ongoing interest and support of our sustainability efforts.

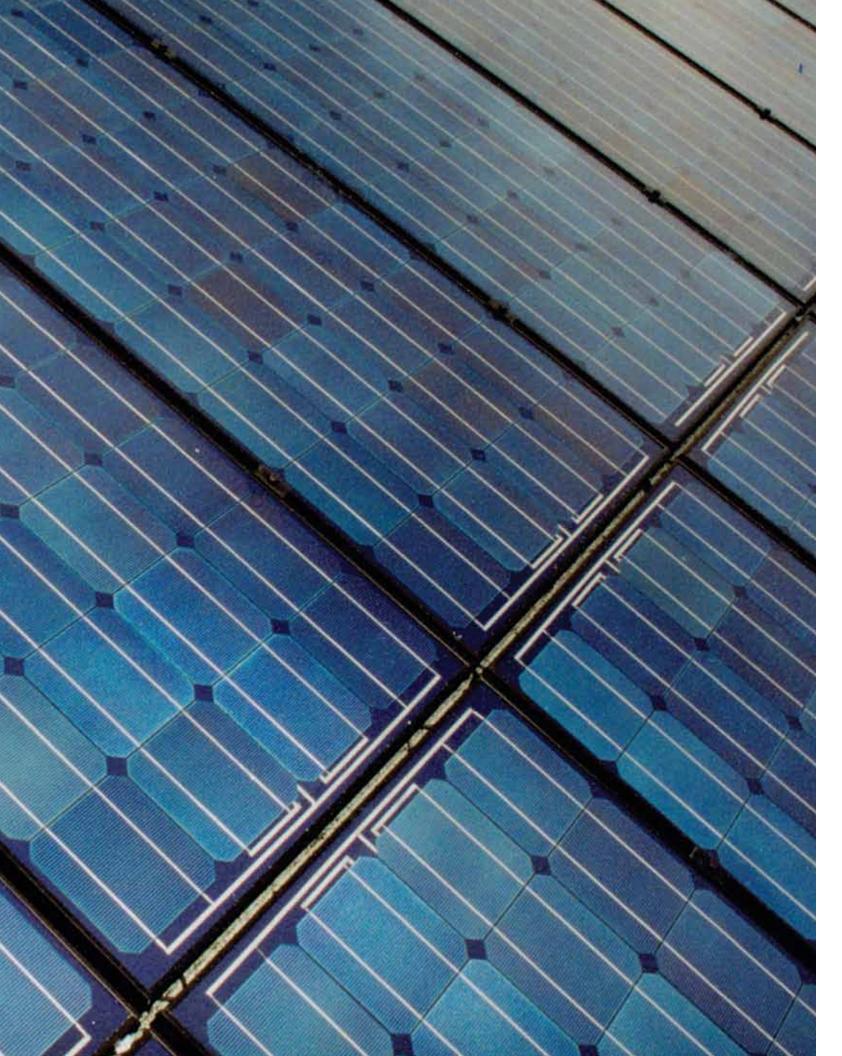
Sincerely,

W. Dary Hotes
W. Gary Gates

President and Chief Executive Officer

# contents

Environmental Stewardship . . . . . . . . . . . . 4 Energy Efficiency ......10 Partnerships . . . . . . . inside back cover



# renewableenergy

#### Renewable Goal

OPPD has set a goal of having 10 percent of the electricity it sells to retail customers – approximately 400 megawatts (MW) – coming from renewable energy by 2020.

- At the end of 2011, OPPD had 142.5 MW of renewables, which represents 4 percent of OPPD's total retail sales.
- That includes wind power, landfill gas and solar.
- By the end of 2012, OPPD should have 218 MW of renewables, 4.9 percent of retail sales.

#### **Wind Power**

#### Petersburg

Construction was completed in October of 2011 on a 27-turbine wind farm near Petersburg, Neb., in Boone County. OPPD has an agreement with TPW Petersburg LLC to buy up to 40.5 MW of generation from the facility.

#### Flat Water

In late 2010, OPPD started taking delivery of electricity generated by the Flat Water Wind Farm in Richardson County, Neb. OPPD has a power purchase agreement for the total 60-MW capacity of this facility, which features 40 GE 1.5-MW wind turbines.

OPPD built a substation at the wind farm site to enable the utility to electrically isolate the wind farm for safety, if ever necessary. Building such substations and connections to transmission lines are key components of adding wind power generation.

#### Ainsworth and Elkhorn Ridge

OPPD has an agreement with the Nebraska Public Power District to buy up to 25 MW of wind energy from NPPD's Elkhorn Ridge wind farm in Bloomfield, Neb., in Knox County, and up to 10 MW from NPPD's Ainsworth wind farm in Brown County, Neb.

Such wind farms' contribution to OPPD's renewables goal for retail sales is less than the farms' generating capacity. That's because a wind

farm's generating capacity is based on a constant wind that's blowing strong enough to keep all of the farm's turbines running at maximum. Because the wind does not blow constantly at a consistent speed, actual generation is less than the listed capacity.

### **Valley Station**

Built in 2001, OPPD's Valley Station wind turbine is located on the Valmont property near Valley, Neb., about 10 miles west of Omaha. The single 660-kilowatt (kW) turbine on this site was OPPD's first wind energy project.

#### **State Wind Energy Conference**

OPPD representatives helped coordinate and present at an annual Nebraska wind energy conference in November 2011. The event provides education on a wide range of topics, including wind energy development, incentives and transmission.

#### **Solar Power**

OPPD worked with Creighton University (CU) to install three variations of solar power technologies and four residential-size wind turbines on the CU campus.

One of the photovoltaic installations consists of traditional solar panels installed on canopy structures in one of CU's parking lots. These provide covered parking and energy to the campus.

Another installation consists of thin film solar panels attached to a standing seam roof, using only adhesive material. The third installation is a traditional panel tracking system that follows the sun to maximize the amount of energy produced.

Altogether, the collectors are capable of generating approximately 120 kW of clean, renewable energy. Currently the largest in the state, this solar project will help OPPD determine which types of equipment will work best for OPPD and its customers.

In addition, OPPD continues to operate and monitor results from a 4,800-watt solar power system it installed for testing at its Elkhorn Service Center in June 2002.

At left, solar panels capture clean, renewable energy.

OPPD's Elk City Station landfill gas-to-energy plant generates enough electricity to power about 4,000 homes annually.



#### **Landfill Gas**

OPPD's Elk City Station landfill gas-to-energy plant at the Douglas County landfill burns methane and other gases given off by decomposing trash to generate a net output of 6.1 MW of electricity. Using these gases as fuel prevents them from being released into the atmosphere.

#### **Green Power Program**

Through this voluntary program, residential and commercial customers help support OPPD's investment in renewable energy by making a contribution on their monthly electric bill. A total of 6,470 residential customers and 18 com-

mercial customers take part in this program.

#### **Green Tag Program**

OPPD sold approximately 320,000 green tags in 2011, almost 150 percent more than in 2010. After providing renewable energy for its Green Power Program, OPPD offers excess green tags for sale through brokers in the voluntary green tag market.

Each green tag represents 1 megawatt-hour (MWh) of energy generated from OPPD's renewable resources. The substantial increase in green tag sales largely reflects OPPD's growing wind power resources.

# environmentalstewardship

# Recycling

Since 2009, OPPD has done comingled recycling at several of its larger facilities. Comingled recycling includes collecting all types of paper and cardboard, plastic water and soft drink bottles, hard plastic containers, plastic eating utensils, soft drink cans, used binders, foam food containers and aerosol cans that have been punctured.

Paper: At smaller facilities that generate less trash, expanded paper recycling collects virtually every form of paper except cardboard.

Wood and Hard Plastics: At OPPD's larger service centers and power plants, employees collect old pallets, tree limbs and construction wood for recycling. Broken power poles also are recycled if they have not been treated with creosote.

Ash: At its North Omaha and Nebraska City Unit 1 coal-fired generating plants, OPPD reclaims fly ash and bottom ash – byproducts of coal-combustion – which are used in concrete asphalt and soil-stabilization materials.

Electronics: Since 2009, OPPD has had a contract for its ongoing effort to recycle waste electronic equipment. With this agreement, OPPD's main supplier of computer workstations, laptops and monitors takes back any electronic waste items OPPD purchased from them at no additional cost. These items are then recycled through a local accredited electronic waste recycler.

#### **Omaha Service Center**

OPPD's Omaha Service Center, notable for its modern design and environmentally-sustainable construction, opened for business on April 18, 2011. The facility is located near the Storz Expressway and replaced the service center located on South Saddle Creek Road.

The Omaha Center is the third building in Nebraska to be certified as a Leadership in Energy and Environmental Design (LEED) platinum building. LEED recognizes those who implement high standards for green building design, construction and operation. Platinum is the highest certification level.

The center includes green features such as a 60-kW array of solar panels, a 1.2-kW vertical-axis wind turbine and a HVAC system incorporating a ground loop heat pump system combined with a solar thermal system. It's also equipped with sustainable features, such as water-saving plumbing fixtures and recyclable outside siding.

Additional green features include:

- Recycled and local construction materials
- Windows designed to take full advantage of daylight for interior lighting
- Low-VOC (volatile organic compounds) paint and floor coverings
- White roof to reflect heat
- Storm-water control and retention
- Water-efficient landscaping
- Reserved parking for hybrid vehicles and capability for recharging plug-in hybrids and battery-electric vehicles

Below, clerestory windows in the line dock are used throughout the center. The windows take advantage



The geothermal heat pump system works in conjunction with a solar-thermal system.



A 1.2-kilowatt vertical-axis wind turbine generates electricity.



Below, a 60-kW array of solar panels covers a large portion of the line dock roof.



OPPD is one of 40 utilities to receive the Chevy Volt, pictured right, as part of a research study with the Electric Power Research Institute and General Motors. The Volt is an extended-range electric vehicle.



**Hybrid Savings** 2011 estimated savings for all OPPD hybrids combined: 7,845 gallons of fuel \$26,563 in fuel costs 76 tons of carbon dioxide

**Estimated savings for all OPPD** hybrids combined, to date: 26,754 gallons of fuel \$78,469 in fuel costs 262 tons of carbon dioxide

#### **Electric Vehicle Readiness**

Virtually every major auto manufacturer in the world is developing plug-in electric vehicles. While the number of electric vehicles (EVs) on the streets is still relatively small, OPPD has studied these vehicles for years.

In 2011. OPPD was one of 40 utilities in the U.S. to receive a Chevrolet Volt, an extendedrange electric vehicle, as part of a research project with the Electric Power Research Institute and General Motors. The project will study behaviors, such as driving and charging habits, to determine what kind of impact EVs could have on utilities in the future.

OPPD's EV Readiness Team, which was formed in 2010, continues to prepare OPPD and its customers for the onset of EVs. To help educate its customers on EVs, OPPD has launched a website, oppd.com/ev, set up a special phone line, 1-855-OPPD4EV (1-855-677-3438), and created a targeted email address, oppd4ev@oppd.com.

# **OPPD Hybrid Vehicle Fleet**

OPPD's vehicle fleet includes 37 gas/electric hybrids, including three plug-in passenger cars and an aerial basket truck used by line crews. Because the truck's basket also can run off of battery power, idle time is greatly decreased, further reducing fuel use and carbon emissions.

OPPD converted two of its conventional hybrid cars to plug-ins to test the advanced battery

technology. Like other utilities, OPPD is trying to gain an understanding of the potential savings afforded by plug-in hybrids.

Drivers of plug-ins can recharge the vehicle's batteries overnight by plugging it into the standard 120-volt outlet found in most garages. In addition to fuel savings and emission reductions, the widespread adoption of plug-in EVs would provide utilities like OPPD with additional electrical load – largely at off-peak nighttime hours - enabling utilities to optimize their power plant operations.

The Electric Power Research Institute estimates the current U.S. power grid could handle tens of millions of EVs, plugged in during off-peak hours, with no concerns about having enough power to meet this new demand.

In addition, utilities eventually may be able to buy power from people who plug their EVs into outlets at the workplace. Using a smart grid system, utilities could connect to the EVs' batteries to tap additional electricity at peak times.

# **OPPD Transportation & Construction Equipment**

OPPD's Transportation & Construction Equipment Department has expanded its use of soy-based hydraulic fluid for its construction equipment. OPPD has used this fluid in aerial basket and digger derrick trucks since 2007, and has used ethanol and biodiesel fuel in certain vehicles since 1993.

In addition, Transportation:

- Sells waste motor oil to a company that uses it to make asphalt, and has started recycling used oil filters.
- Employees at all OPPD mechanical shops clean parts with soap and hot water, instead of petroleum-based solvents.
- Has expanded the use of bulk fluids in its shops and at OPPD power stations to reduce waste of aerosol cans and drums/barrels and to get better pricing on the fluids.
- Participates in OPPD efforts to recycle scrap iron, aluminum and other metals.
- Partners with OPPD's battery supplier on battery recycling.
- Continues to install cab heaters in construction vehicles to eliminate vehicle idling for keeping crews warm in the winter.
- Has converted from lead wheel weights to steel.

#### **Power Drive Program**

The OPPD Power Drive program began in 1998 to encourage student interest in energyrelated and automotive-related careers. Students build one-person light-electric vehicles (LEVs) to race in competitions at the end of the school year.

Twelve high schools participated the first year and 56 schools in Nebraska and Iowa participated in the 2010-2011 program by building 109 vehicles.

The program brings a practical focus to students' math, science and vocational education. In addition, Power Drive organizers award two \$1,000 scholarships yearly. The scholarships are available to students who plan to pursue careers in electronics, automotive technology, engineering, physics or to become a line technician.

#### **OPPD Green Team**

The OPPD Green Team supported Earth Day with an event at Energy Plaza that covered many areas of sustainability from electric vehicles to the connection between wellness and being environmentally friendly. The team also continued its success in encouraging employees to sign up for paperless billing with over 33 percent of employees now participating.

A series of articles written by "Mrs. Clean Green", an OPPD employee, and her daughter highlighted the good and the not-so-good of many green cleaning products on the market today.

Below, students race at the Power Drive rally.



**Cleaning Products & Equipment** 

OPPD provides environmentally-safe cleaning products to its janitorial contractors. This ensures all locations are using the same Green Seal, EPA-certified cleaning products.

OPPD continues to use automatic foam soap dispensers in restrooms companywide, which reduces the amount of soap used, and uses soap that has no harmful chemicals.

OPPD's companywide janitorial contractor specifies that any cleaning equipment used must be electrically powered rather than using propane, a common source of power for floor burnishers.

### **Tree Promotion Program**

As part of its Tree Promotion Program, OPPD has set up a Tree-Planting Fund, through which it sponsors a number of tree-planting projects each spring for nonprofit groups in its service area. Since 1989, OPPD has provided approximately \$1.05 million in funding for such projects, resulting in the planting of roughly 113,700 trees and shrubs.

#### **OPPD Arboretum**

Opposite page, OPPD's

arboretum offers

educational areas for

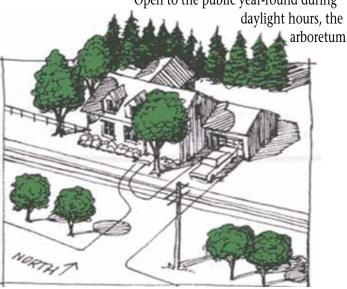
onstrations of proper

visitors, including dem-

tree-planting practices.

Located at 108th and Blondo Street in northwest Omaha, the OPPD arboretum helps educate visitors on proper tree-planting practices. This 26-acre site features over 1,000 trees and shrubs, representing more than 200 species.

Open to the public year-round during



Proper tree planting can result in energy- and cost-savings and reduce tree interferences with power lines. **Pictured above:** Short trees don't interfere with utility lines. Large deciduous trees provide shade in the summer and don't block the low winter sun. An evergreen on the north blocks winter winds.

National Arbor Day Foundation

includes two miles of walking trails and an outdoor classroom.

#### **Tree-Trimming Practices**

OPPD trims tree limbs away from overhead power lines to maintain public safety and reliable electric service. Under the direction of OPPD foresters, who are certified arborists, OPPD's contractor line-clearance crews follow the American Standards Institute woody plant maintenance standard.

The standard calls for tree-trimmers to cut branches back to the parent limb. This method enables the pruning cuts to heal more quickly, reducing the chances of damage from insects or disease, and promotes a healthier regrowth away from nearby power lines.

#### Tree Line USA Utility

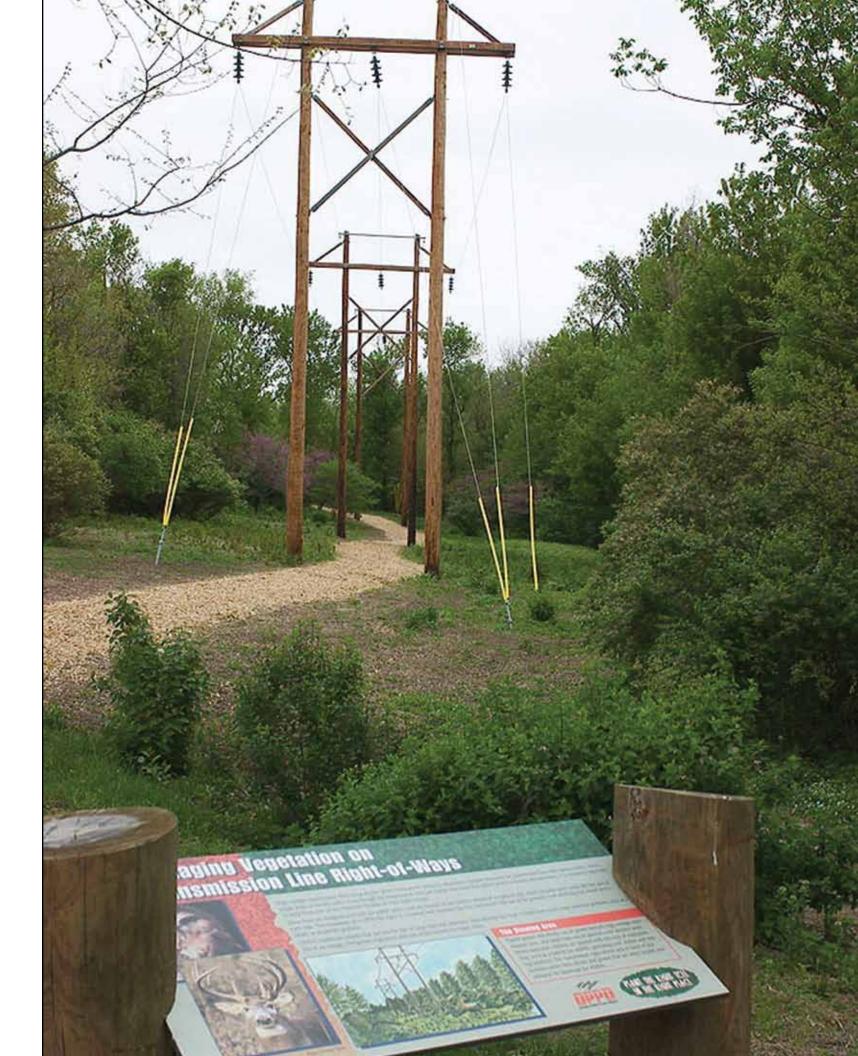
The National Arbor Day Foundation (NADF) has recognized OPPD as a Tree Line USA Utility. The NADF, in cooperation with the National Association of State Foresters, recognizes utilities that employ practices to protect and enhance America's urban forests.

### **Information Technology**

OPPD continues to reduce the number of its laser printers by installing multi-function devices (MFDs) that serve as printers, copiers, scanners and fax machines. This reduces energy use because, on average, four printers are removed for every MFD installed. The MFDs also produce up to 90 percent less waste from toner cartridges than traditional laser printers.

OPPD also continues its ongoing effort to recycle waste electronic equipment. OPPD's main supplier of computer workstations, laptops and monitors takes back any electronic waste items that OPPD purchased from them, at no additional cost. The vendor is required, by contract, to recycle these items through a local accredited electronic waste recycler.

All OPPD workstations and laptops meet both ENERGY STAR and Electronic Product Environmental Assessment Tool requirements. Microsoft Lync 2010 was installed on all workstations and laptops except in the call center. This expanded OPPD's video conferencing capabilities down to the individual employee level. Video-conferencing increases efficiency and reduces travel around the district's 13-county service area, saving fuel and reducing emissions.





# **Lighting Upgrades**

OPPD updated lighting in three of its facilities in 2011, including the Syracuse center, Tecumseh and Humboldt. The upgrades include replacing T12 fixtures with T5 fixtures and the installation of

with T5 fixtures, and the installation of occupancy sensors and exit lights. This was an opportunity to get rid of old energy-inefficient equipment and replace them with more energy-efficient equipment. The projected savings from the lighting project upgrades are about 28 kW of demand reduction and about 61,000 annual kilowatt hours (kWh) of reduction.

# **Bill-Payment Options**

OPPD continues to offer environmentallyfriendly bill payment options to its customers. In 2011, paperless billing grew to 24,100 customers and electronic bill-payments reached an all-time high of 466,000 transactions.

These sustainable options also reduce OPPD's costs and enhance customer satisfaction.

For those customers who continue to receive a hard copy of their bill, these statements are printed on paper produced through certified sustainable forestry practices.

### **Green Capacitors**

By installing capacitors on the distribution system, OPPD can reduce system losses during peak periods. In 2011, OPPD installed 50 capacitor banks which resulted in a peak reduction of 526 kW.

# energyefficiency: residential customers

# **Energy-Management Workshops**

To reach customers with special needs, including seniors, people with disabilities and those on fixed or limited incomes, OPPD participates in free public workshops. These ongoing events focus on wise energy use, low-cost weatherization techniques and energy-cost budgeting. The workshops also provide advice on how people can access community resources that are available to help them meet their energy expenses.

For example, OPPD presents Greening Your Energy Budget workshops at the Juan Diego Center in Omaha for Spanish-speaking customers. OPPD partnered with the Neighborhood Center to offer home energy-efficiency workshops to residential customers.

OPPD also collaborated with community-based social service agencies, nonprofit groups, neighborhood associations, other utilities, and community colleges to sponsor additional workshops. For instance, in 2011 OPPD and Metropolitan Community College joined forces to offer Green Energy Efficiency classes for the spring, summer, fall, and winter quarter sessions.

# **Energy Information Center**

OPPD provided continuing education professional courses in residential building science for real estate professionals, architects, and engineers. The professional courses' topics included energy-efficient lighting, residential heating and cooling systems, and energy efficiency and building science practices. OPPD presented to 108 professionals in 2011.

For its customers, OPPD provides an energy-efficiency video library on its website, oppd.com. In 2011, OPPD produced a video clip, "Energy Efficient Home Building", which has received positive feedback from customers. In addition to the videos, customers can find more energy-management tips on oppd.com.

Those who have specific questions or who need more information can call the OPPD Energy Advisor office at 402-636-3850 or 1-800-648-2658 and talk to subject-matter experts.

# **OPPD Energy Advisor**

The Energy Advisor team provides energy-management information on a wide range of topics, such as lighting, insulation and weatherization, heat pumps, space heaters, and power quality. OPPD energy advisors handled 2,182 customer contacts in 2011.

#### **Environmental Element**

In 2011, Omaha by Design (ObD) progressed to the next phase of moving the Environment Element (EE) sustainability plan forward. ObD formed the Environment Omaha Implementation Team (EOIT) to take on the task of implementing the Environmental Element plan. The plan is an important part within the city of Omaha's comprehensive master plan.

OPPD played a key role in assisting the process of advancing the sustainability plan with representation on the EE committee and the EOIT. In addition, OPPD will participate in several EE subtask forces, which will be formulating each EE plan to be presented to the city of Omaha for approval.

### **ENERGY STAR Pledge**

Individuals take this pledge via the Environmental Protection Agency's ENERGY STAR website. By signing up, people pledge to complete green steps such as replacing standard light bulbs with compact fluorescents, take actions to make their heating and cooling system more efficient, buy ENERGY STARqualified appliances, etc.

The annual pledge runs from Earth Day (April 22) to Earth Day. For 2011-12, OPPD's goal is to encourage people to take the pledge and help reduce greenhouse gas emissions by 1,300,000 pounds annually. As of January

2012, OPPD was at 1,850,207 pounds, or 142 percent of its goal.

# **ENERGY STAR for New Homes Program**

Through this program, OPPD helps people make a smart investment by buying a home that is high-quality, high-performing and environmentally friendly.

OPPD works with professionals in the home-building industry to aid in the successful completion of an ENERGY STAR-rated home. Homes that earn the ENERGY STAR certification meet rigorous guidelines for energy efficiency and are tested by an independent home energy rater. Omaha saw an addition of 493 ENERGY STAR homes in 2011.

To earn an ENERGY STAR rating, a home must meet strict guidelines for energy efficiency set by the Environmental Protection Agency (EPA). Per EPA guidelines, a qualifying home must be at least 15 percent more energy-efficient than one built to the 2004 International Residential Code. The home also must include additional energy-saving features that make it 20 to 30 percent more efficient than a standard home. This high efficiency is achieved through features such as airtight construction and ducts, effective insulation and high-performance windows.

# 

Below, OPPD's Renee Jacobsen and Hearthstone Homes' Dave Vogtman check a Hearthstone Home being built to ENERGY STAR specifications.



### **Energy Detective Program**

OPPD has partnered with the Nebraska Energy Office (NEO) and other Nebraska utilities to provide an educational program on energy conservation to fifth-grade students. The goal is to encourage students to become energy-

conscious consumers at an early and impressionable age.

During the spring and fall of 2011, the NEO, OPPD and Metropolitan Utilities District provided curriculum supplements and hands-on Energy

Detective-themed kits to dozens of schools in OPPD's service territory, with nearly 8,000 students participating in the 2010-2011 school

year. Throughout the state, 80 utilities partnered with NEO to use ARRA funds to provide 19,810 energy-efficiency kits to Nebraska's fifth-grade students. The kits provide students with items such as faucet aerators to re-

duce water usage and CFLs, and encourage them to "investigate" energy usage at home. In one exercise, the students replace an incandescent bulb with a CFL and track the energy savings.

# Get A Head Start On Energy Education

This educational program was developed by the Nebraska Energy Assistance Network (NEAN), of which OPPD is a founding member. The program was piloted statewide in 2009 in partnership with the Nebraska Head Start Association and was eventually expanded beyond Nebraska.

In 2011, NEAN awarded nine grants to nonprofit organizations throughout the state to receive program materials.

OPPD further expanded the program within its own service territory by targeting community-based organizations and agencies that work with seniors, new home buyers,

those with limited incomes or those struggling financially.

The program is designed as a learning experience for households to reduce or stabilize energy use in their homes and to better manage and plan for energy-related expenses. Curriculum materials are used in-home with hands-on instruction. Participants receive a home energy-efficiency kit containing low-cost weatherization items they install with their facilitator. Pre- and post-evaluations from the pilot indicated knowledge and behavioral changes in participants.

Recent surveys continue to show participants are taking low-cost actions to conserve energy in their homes, increasing numbers are enrolling in level payment plans, and many say it is becoming more important for them to find an energy-efficient home to rent or buy.

# Low-Income Home Energy Conservation Act

OPPD had legislation (L.B. 1001) introduced in the Nebraska Legislature in 2008 to provide funds to help low-income homeowners improve the energy-efficiency of their home. The resulting Energy Conservation Improvement Fund is administered by the Nebraska Department of Revenue.

Through this fund, 55 homes were weatherized in the OPPD service area in 2011. This program enables OPPD to combine a set amount of its revenues with matching state tax revenues to help homeowners make energy-efficiency improvements.

OPPD also is partnering with the city of Omaha and Weatherization Trust Inc. to weatherize 100 homes in the Orchard Hills neighborhood through a federal stimulus grant. This project began in December 2010, with 10 homes completed as of Jan. 27, 2011.

# **Heat Pump Program**

OPPD has heat pump programs for residential customers, commercial and industrial customers, and apartment builders.

For residential customers, OPPD offered an incentive for high-efficiency heat pumps and air conditioners. The overall impact from this residential program in 2011 was a 2.2-MW reduction in demand.

### **AC Management Program**

In the spring of 2012, OPPD will launch its Air Conditioning Management Program. This program will pay customers to participate in summer peak-load reduction efforts, which can help keep rates low. The goal is a 15-MW peak demand reduction by the end of 2012.

As part of the program, OPPD will install a device near the customer's outside air conditioner or heat pump unit. On summer days when demand for electricity is at its highest – a maximum of 12 days per year and never on weekends or holidays – the device will manage participants' air conditioners in 15-minute intervals for 2.5 hours between 4:30 p.m. and 7:30 p.m. During a management event, the indoor furnace blower fan will continue to circulate air throughout the home.

Participants in the program will receive a bill credit in the amount of \$30 after the device is installed and an additional \$20 for each year of participation.

The program will help OPPD reduce the peak demand for electricity. Reducing the peak demand during high-usage times helps OPPD delay the need to build new power plants, which helps keep OPPD's rates low.

# **Nebraska Energy Office (NEO)**

In 2008, OPPD committed to NEO's "30 Percent Better – Nebraska's Upgraded Commercial Energy Code" project, which was funded by the U.S. Department of Energy. OPPD allocated \$30,000 of cash and in-kind services for this project. In 2011, OPPD supported several of the Energy Code Training workshops throughout the State with one workshop held at OPPD's Energy Plaza.

In addition, OPPD provided representation on NEO's Building Code Advisory Committee. The committee's work involves review of and making recommendations on the state energy codes, an assessment overview of energy code compliance, energy code training opportunities, and organizing a regional energy codes conference to take place in Omaha in 2012.

### Watt Detector Kits

In 2011, OPPD started the Watt Detector

Kit (WDK) program. This program is a collaborative effort between public libraries and OPPD. The program's goal is to educate the public by bringing awareness of how electrical plug-in appliances consume energy in the home.

OPPD started a WDK pilot project in 2010 with the Omaha Public Libraries. The libraries received 100 WDKs to distribute among the 12 branches. By the end of 2011, Omaha Public Libraries had recorded 315 WDK checkouts.

With the success of the library pilot, in June 2011 the program expanded to include any public library served in OPPD's service territory. The project expanded to include an additional 24 libraries and 48 WDKs. In addition, OPPD received inquiries into its WDK program from other utilities: Clallam County PUD – Port Angeles, Wash.; Fremont Utilities,

Fremont, Neb.; and the Nebraska Public Power District.

# **Home Energy Audits**

OPPD established its Home Energy Audit program in 2006 to help customers take control of their energy use. For these audits, a certified energy rater conducts a blower-door test and uses thermal imaging to determine air leakage points throughout the home.

The customer receives a comprehensive report and recommendations specific to their home to improve its energy efficiency. The goal is that the homeowner will make improvements to reduce air leakage, thus reducing their energy use and enhancing the

home's indoor air quality. In 2011, 79 OPPD customers participated in the Home Energy Audit program.

# UNO Energy Savings Potential Program

The Energy Saving Potential Program (ESP) was a collaborative opportunity between the University of Nebraska at Omaha (UNO) and OPPD. From 2006 through 2010, OPPD bud-

Home Energy	Audits
2011	79
2010	100
2009	85
2008	106
2007	104
2006	13



A blower door test is a key part of a home energy audit.

# 2011 OPPD Get a Head Start on Energy Education grant recipients:

Omaha Healthy Kids Alliance
Family Housing Advisory Services
Goldenrod Hills Community Action
Good Neighbor Ministries Inc.
City Sprouts Inc.

geted \$500,000 annually for this collaborative partnership, which extended into 2011 for the completion of one of the projects.

The research topics focused on customer behavior and ways to reduce energy consumption. Specifically, these topics included various studies related to low-income, neighborhood energy action efforts, real-time energy monitoring and commercial customer energy-efficiency program adoption.

In 2011, the commercial customer energy-efficiency program adoption rate study indicated that commercial and industrial customers are most concerned with having a power company that provides reliable service – including information and time of restoration during an outage – followed by having reasonable rates.

# **Refrigerator Recycling Program**

With the help of a grant from the Nebraska Department of Environmental Quality, OPPD encouraged its customers to recycle their old, inefficient, secondary refrigerators or freezers. Customers were paid \$35 for each of these appliances, which were then picked up and recycled. To kick off the 2011 Refrigerator Recycling Program, OPPD enlisted the help of several local artists to create green-themed artwork using refrigerators as basis for their work. This refrigerator art was installed at various locations throughout downtown Omaha to promote the program.

A total of 2,057 units were picked up from the customers' home, and 95 percent of the materials that made up these appliances was recycled. Many of these appliances had been running in garages and using up to four times more electricity than a new unit.

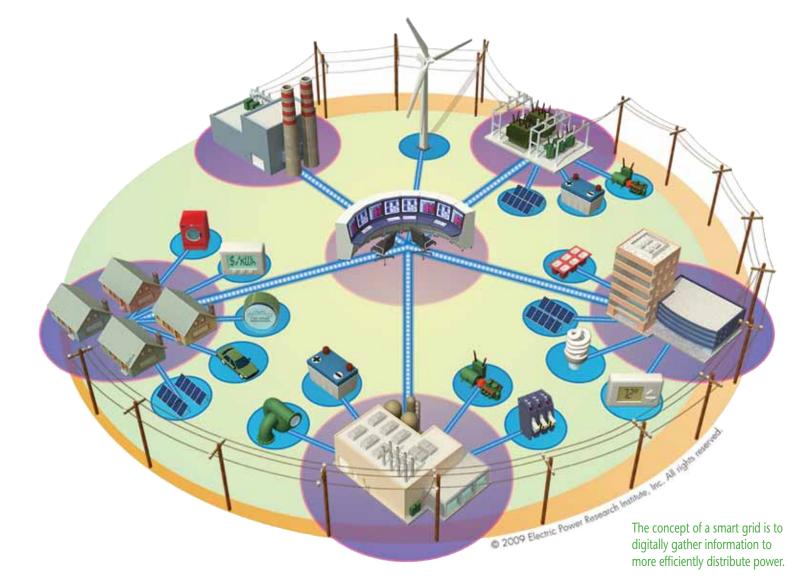
# Trash/Recycling Bin Messages

Throughout 2011, OPPD urged customers to go green via messages on combination trash/recycling bins throughout downtown Omaha.

The messages encouraged customers to take steps such as becoming a Green Power Partner, managing their OPPD account online, and signing up for paperless billing.

The effort also encouraged people to take an immediate green step by sorting their trash from recyclables via the bins themselves.





### **Smart Grid Overview**

Smart grid technology has the unique potential to transform how utilities deliver energy to their customers. Many utilities across the country have begun deploying smart grid equipment in a number of different configurations, with varying levels of success.

Although Nebraska utilities have not yet deployed fully integrated smart grid technology, some have begun to study the impact a smart grid may have in their service area.

Large-scale smart grid systems require a tremendous amount of planning and a large capital investment. For these reasons, utilities have stayed cautiously optimistic about the possibilities that smart grid holds.

However, limited system upgrades and large-scale meter change-outs – which enable

Opposite page, artists used refrigerators as their canvasto promote OPPD's Refrigerator Recycling Program.

utilities to collect interval data in daily, hourly or even 15-minute intervals – are theoretically possible. These would require large infrastructure upgrades and hefty upgrades to data storage capacity.

With a healthy dose of Nebraska good sense, public power utilities are approaching the creation of a smarter grid conservatively. Most early smart grid efforts focused on smart meters, but more utilities are recognizing the potential for improved reliability and efficiency through information and technology enhanced grid operation.

The growing use of automated meter reading (AMR) systems could effectively serve as a first step in the adoption of smart grid technology. A total of 86 percent of rural electric systems in Nebraska have begun implementing AMR systems, some of which already have full AMR deployment.

page 14 2011 sustainability report page 15

# energyefficiency: commercial customers

**Digi-RTU Optimizer Pilot** 

In 2011, OPPD expanded its Digi-RTU Optimizer Pilot program, which was launched in 2010 (RTU refers to rooftop units for air conditioning on commercial buildings).

This pilot has gained national attention through articles from the American Public Power Association (APPA) and by presentations at various national conferences. The pilot also received grant funding through the APPA due to the nature of its innovative technology and ultimately received the APPA's DEED Energy Innovator Award for 2011 (one of only two nationally).

Results of the pilot show an energy reduction range of 28 to 68 percent with the average being 47 percent, an average reduction in demand of 40 percent and reduction in system cycling of up to 70 percent, all while maintaining occupant comfort.

The Digi-RTU Optimizer technology uses one variable frequency driver to modulate the

fan is modulated based on actual cooling load to maintain the space temperature required.

OPPD's commitment to piloting this technology has been noticed by a number of other utilities. This technology may be the breakthrough that is needed to maximize energy savings in the area of rooftop units and transform the market.

## **Lighting Incentive Program**

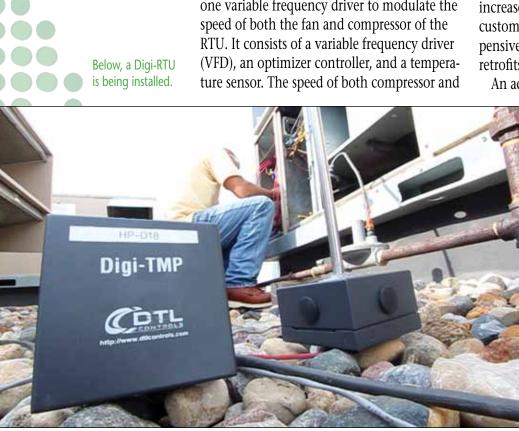
OPPD's commercial and industrial (C&I) customers will save more than 15,000 MWh each year thanks to the 2011 Lighting Incentive Program. OPPD has expanded this program to include certain qualified LED and CFL replacements that are not incented by many other utilities in an effort to attract as many customers as possible to become more energy efficient with their lighting.

This program provides monetary incentives to C&I customers for revamping their lighting with more energy-efficient systems. Such increased energy efficiency helps all OPPD customers by delaying the need to build expensive new power plants. OPPD reimburses retrofits, up to \$20,000 per building per year. An additional benefit is the green jobs this

> program creates. The numbers above also represent a customer investment of over \$3.7 million in energy-efficient lighting.

In 2011, OPPD approved incentive payments for lighting projects that reduced electrical demand by 3.2 MW and will reduce annual usage by approximately 15,000 MWh.

The Lighting Incentive Program has exceeded goals for reducing demand and usage each year since it began in 2009. This was accomplished while staying under the program's budget and under the industry average for similar results.







# **Energy Commissioning &** Optimization (ECO 24/7)

OPPD's commercial and industrial customers can take advantage of ECO 24/7, a service that uses patented technology to integrate and optimize heating and cooling systems and other energy-related systems to improve occupant comfort and minimize energy use.

Special focus is placed on utilizing existing equipment when possible to ensure that customer's capital dollars are maximized and waste is minimized. This also has a positive green impact beyond energy savings.

These projects include the optimization of natural gas-related systems to further savings and positively impact the customer and the environment.

Customers have seen energy savings of up to 50 percent after completing an ECO 24/7

project. Three ECO 24/7 projects completed in 2010 (savings are reported one year in arrears) saved 312 kW in reduced peak demand and almost 2,000,000 kWh in reduced consumption.

The ECO 24/7 service includes training building engineers so they can sustain the comfort and energy savings achieved. This helps make ECO 24/7 projects sustainable with little or no follow-up by OPPD and provides these engineers a unique education around energy efficiency.

For example, nine commercial buildings qualified for ENERGY STAR status after ECO 24/7 projects were completed. The same buildings may re-qualify for ENERGY STAR status in 2012 without requiring follow-up services from OPPD.

One building in particular, Terrace Plaza,

During 2010 and 2011, UNMC completed multiple ECO 24/7 projects, which included the Michael F. Sorrell Center for Health Science and Education, shown above.

2011 sustainability report page 16 2011 sustainability report



located at 11414 West Center Road in Omaha, achieved ENERGY STAR status after an ECO 24/7 project was completed in 2003. With no follow-up by OPPD since the initial project, that building continues to maintain its ENERGY STAR status.

# Innovative Energy Efficiency Project Pilot

In June of 2011, the Innovative Energy Efficiency Project (IEEP) Pilot was introduced to OPPD customers. The objective of this pilot is to provide commercial and industrial (C&I) customers financial incentives to permanently reduce their energy and demand usage through innovative energy-efficient projects. The pilot pays customers two incentives: one for an initial energy study and another for project results as shown in peak kilowatt reduction.

Qualifying projects lower annual energy consumption by 10 percent or more and reduce peak demand. An IEEP Trade Ally group, patterned after OPPD's Lighting Trade Ally group, was initiated as part of the pilot and currently includes five qualified providers. This recruitment includes annual training, and completing and acceptance of a request for information.

Due to the lead time and implementation time associated with the types of projects that qualify for these incentives, there are currently no savings to report from the pilot rollout. Based on industry experience, it may be 2013 before numbers will be reported. However, the savings results of the projects that can be included are substantial and worth the wait.

IEEP projects may include the following:

- ECO 24/7 project and other similar building energy-efficiency projects
- Energy Management Systems upgrade and optimization
- Chiller/boiler plant upgrades, retrocommissioning, or optimizations

USDA grants enable OPPD to conduct energy audits for customers who use irrigation, grain-drying and other ag-related equipment.

- Air distribution system retrofit and control upgrade/optimization
- Rooftop units retrofit and optimization
- Heat pumps retrofit and optimization
- Motor upgrades
- Variable frequency drivers (VFDs) and/or high-efficiency motors
- Air compressor
- Refrigerant systems

# **Agricultural Energy Audits**

Nebraska utilities are committed to helping their agricultural customers save energy. OPPD provides its agricultural customers with energy audits for irrigation and grain-drying operations. The audits review the cost benefits of converting irrigation pumping and graindrying operations to more energy-efficient equipment. The USDA requires an energy audit before such operations can apply for a grant, which covers 25 percent of the cost for efficiency upgrades.

Each participant receives an energy audit report, which is easy to read and interpret. The report outlines the current energy use and the potential improvements with the conversion. The audit outlines the projected annual savings, estimated annual energy savings in BTUs and project payback in years.

# Commercial ENERGY STAR Challenge

OPPD has taken the ENERGY STAR Challenge and succeeded in becoming the first utility in the US who can claim ENERGY STAR Leader Status! The Department of Energy (DOE) and Environmental Protection Agency (EPA) program involves tracking energy consumption at commercial buildings and mak-

Commercial ENERGY STAR Results	2011	2010
ENERGY STAR buildings	72	57
ENERGY STAR Challenge participants	27	25
Benchmarked buildings	946	709
Total square feet of ENERGY STAR space	9,030,506	6,997,196
Total buildings represented at roundtables	388	388

ing improvements to reduce overall energy usage across the rated buildings by at least 10 percent.

OPPD focused on this goal to set a strong example and to encourage its commercial and industrial customers to follow our lead. Two key components to earning this status include completion of ECO 24/7 projects and extensive lighting retrofits.

This impact is also felt by our ratepayers in a positive way as each kWh saved can now be utilized and purchased by customers.

To promote the Commercial ENERGY STAR Challenge during 2011, OPPD:

- Hosted quarterly ENERGY STAR Challenge roundtable meetings for dozens of key account customers and others interested in energy efficiency.
- Worked with various agencies to promote benchmarking all of Nebraska's public schools in Portfolio Manager (the free ENERGY STAR benchmarking tool).
- Held various Portfolio Manager training sessions for interested customers and organizations.

### Commercial Heat Pump Program

OPPD provides a one-time incentive of \$50 per nominal ton for the installation of the following types of electric heat pump HVAC systems in commercial and industrial facilities:

- Air-source heat pumps, minimum 13 SEER (Seasonal Energy Efficiency Ratio)
- Water-source heat pumps
- Geothermal heat pumps

Highlights from the 2011 program include the installation of 2,165 tons of energyefficient heating and cooling, which were installed at a total of 31 projects.

Through its Commercial Heat Pump Program, OPPD also offers a full spectrum of turn-key geothermal and water-source heat pump design solutions for commercial facilities. The EPA has named the geothermal heat pump system as the most efficient heating and cooling system available today.

Omaha Public Schools (OPS) and OPPD

partner on many geothermal systems as OPS continues to pursue energy efficiency for the comfort of their students and value to their residents.

## **APPA Energy Innovator Award**

OPPD has been named a recipient of the 2011 Energy Innovator Award by the American Public Power Association (APPA).

Energy

Innovator

Award

The award recognized the OPPD Digi-Optimizer pilot project. The APPA limits these awards to a maximum of two covering utilities from across the United States.

### Time-of-Use Rates

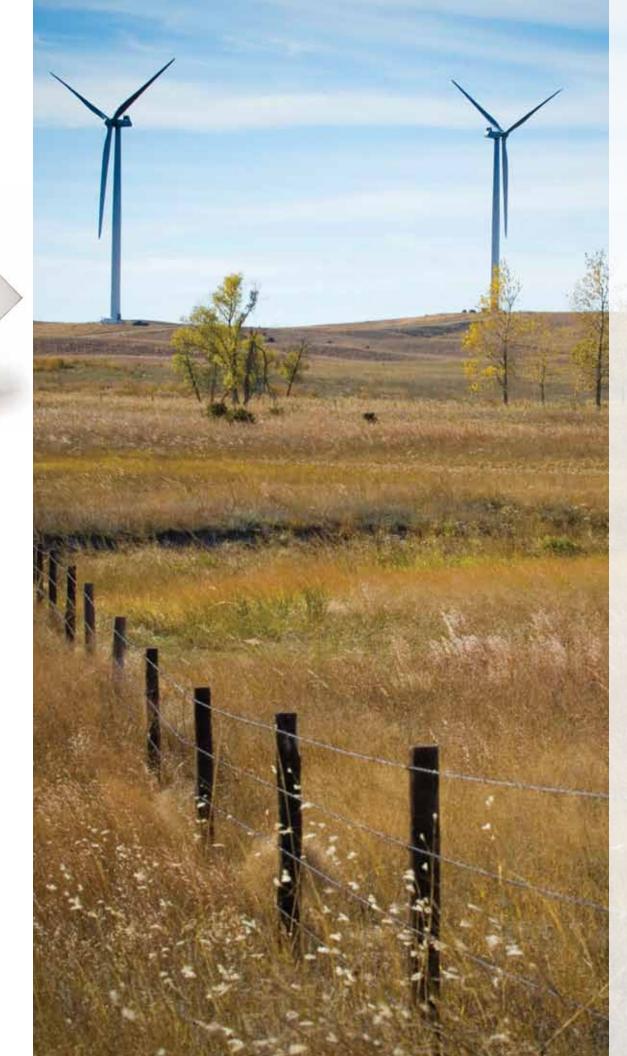
Time-of-Use rates offer OPPD commerical and industrial (C&I) customers rewards in the form of lower demand charges when they shift or reduce their usage during peak load time periods in the summer months.

OPPD offers C&I customers these rates, along with the curtailable rates explained below, to help "shape" its customers' peak demand for electricity, thus deferring the need to build new power plants.

#### **Curtailable Rates**

C&I customers on curtailable rates receive credits or payments for curtailing or interrupting their energy use for a set period of time at OPPD's request. They do so by reducing or shifting load to another time or by using their own back-up generators.

In 2011, there were 35 customers, which included 43 specific sites, taking advantage of curtailable rates. There were two curtailments lasting a total of eight hours during the year, which shed an average of 40.6 MW and over 320 MWh. Think of it as taking twenty major office buildings off of the OPPD system just during key peak times with the result translating to savings for all OPPD customers.



# Partnerships and Working Associations

OPPD works with the following groups on Aim Green efforts:

- Building Owners and Managers Association of Omaha
- City of Omaha's Sustainable Initiative
- Creighton University
- Green Omaha Coalition
- Habitat for Humanity Omaha
- Nebraska Department of Health and Human Services
- Nebraska Energy Assistance Network
- Nebraska Energy Office
- Nebraska Wind Working Group
- Omaha by Design
- Omaha Healthy Homes Partnership
- University of Nebraska at Omaha
- Waste Cap of Nebraska

